

CLAIMS

1. A method for determining the lower thread supply on the lower thread bobbin (29) of a sewing machine (1) having a light transmitter (51) and a light receiver (53), comprising directing a light beam bundle (57) from the light transmitter (51) through slits (49', 49'') in a hook base (27) and through peripheral openings (45', 45'') situated in a hook body (17), tangential to a bobbin core (43) and to a thread packing, through a packing space (47) between flanges (35, 39); receiving at least one of the light beams (57x) by a light receiver (53); forwarding a received signal to a machine control unit for the calculation of a spool packing diameter (D); and acquiring a momentary angle of rotation (α) of the hook body (17) and/or a time (t) when one of the light beams (57x) is registered by the light receiver (53).
2. The method as recited in Claim 1, wherein a location (a_x) of a first and/or a last of the light beams (57x) on the light receiver (53) is acquired.
3. The method as recited in Claim 1, wherein a duration of light reception and/or light quantity impinging on the light receiver (53) during a hook rotation is acquired.
4. A sewing machine having an lower thread supply monitoring system, comprising a hook (15) having a hook body (17), a hook base (27) located in the hook body (17), and a freely rotatable lower thread bobbin (29) located in a bobbin case (28) in the hook base (27), and comprising a light transmitter (51) and a light receiver (53), slits (49', 49'') and openings (45', 45'') being made in a periphery of the hook body (17) and in a housing of the hook base (27), which admit a tangential passage of

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light beams (57) from the light source (51) to the light receiver (53) through a packing space (47) on the bobbin (29), the light receiver (53) comprising one of a CCD element, a photocell, or a phototransistor, the light receiver (53) registering a location of impingement of a first and/or a last light beam (57) on the light receiver (53), and being connected with a machine control system.

5. The sewing machine as recited in Claim 4, wherein the light receiver (53) comprises means that acquire a received light quantity and/or exposure duration.